

AMENDMENT UNDER 37 CFR § 1.111  
Serial No. 10/760,290

### REMARKS

A total of 10 claims remain in the present application. The foregoing amendments are presented in response to the Office Action mailed December 17, 2004, wherefore reconsideration of this application is requested.

By way of the above-noted amendments, claims 1 and 2 have been amended to more clearly define features of the present invention. More particularly, claim 1 has been amended to emphasize that the present invention provides a method for controlling "dispersion of light propagating within an optical waveguide", in which the refractive index of a variable index material within a control region is varied to control "a group delay of light reflected by a grating within the waveguide ". These features are clearly described in detail at paragraphs 42-47 of the originally filed specification. Claim 2 has been amended in a similar manner. , Claim 3 has been cancelled without prejudice or disclaimer of the subject matter therein. New claims 4-11 have been introduced to define subject matter disclosed but not claimed in the original application. Paragraph 36 of the specification has been amended to

In preparing the above-noted amendments, careful attention was paid to ensure that no new subject matter has been introduced. In particular, the subject matter of new claims 5, 6 and 9-11 can be found in paragraph 45 and FIGs. 4 and 5 of the original specification. The subject matter of new claims 4 and 7 is disclosed at paragraph 35 of the original specification. The subject matter of new claim 8 is disclosed in FIG. 16 and the accompanying description in the original specification. Thus it is believed that the above-noted amendments do not introduce any new subject matter.

Referring now to the text of the Office Action:

- The Declaration has been objected to for failure to identify the residence information of the inventors or the applicant
- claim 3 stands rejected under 35 U.S.C. § 112 as failing to distinctly claim the subject matter of the present invention; and

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- claims 1 and 2 stand rejected under 35 U.S.C. § 102(e), as being unpatentable over the teaching of United States Patent No. 6,498,877 Chowdhury et al.;

The Examiner's rejection of claim 3 has been addressed by way of the above-noted cancellation of claim 3. It is believed that the Examiner other rejections are traversed by the above-noted amendments, and further in view of the following discussion.

#### Objections to the Declaration

The present application was filed with a Application Data Sheet pursuant to 37 C.F.R. § 1.76, which clearly sets out the names and residence addresses of each of the inventors, as well as the post office address of the Applicant, Phototech Inc. For completeness, Applicant submits herewith a copy of the Application Data Sheet filed with the application on January 21, 2004.

#### claim rejections under 35 U.S.C. § 102(e)

United States Patent No. 6,498,877 Chowdhury et al. teaches a tunable optical fiber Bragg and long period grating filter, in which a variable index "additional layer" 16 is used to control a "propagation constant of the core as well as the cladding modes" (Col. 6, lines 9-12). Control of the propagation constant in this manner facilitates control of the wavelength which is passed or filtered by the grating. As is well known in the art, the structure of Chowdhury et al. produces a very narrow-band response. That is, the apparatus of Chowdhury et al will pass or filter light within a very narrow range of frequencies, centered on the resonant frequency of the grating..

In contrast, the present invention provides methods of controlling dispersion of light propagating within an optical waveguide. In accordance with the present invention, a variable index material (such as composite liquid crystal) is disposed surrounding a grating within a control region of the waveguide. In some embodiments, the grating is uniform and a non-uniform electric potential is applied to the variable index material. In other embodiments, the grating is non-uniform and a uniform electric potential is applied to the variable index material. In all cases, controlling the index of refraction of the variable index material has the effect of controlling the differential group delay imposed on light reflected by the grating. Chowdhury et

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al. do not teach or suggest either the structure or operation of the present invention. In particular:

- Chowdhury et al. do not teach or suggest controlling dispersion. In fact, given the narrow-band response of the Chowdhury et al apparatus, dispersion control (which inherently requires a broadband response) is simply not possible. In the present invention, broadband control is provided by the non-uniformity of the grating/stimulus combination (i.e. a voltage gradient is applied to a uniform grating, or a uniform voltage is applied to a non-uniform grating) Chowdhury et al does not teach or suggest either this mode of operation or the structures required to achieve it;
- Chowdhury et al. do not teach or suggest controlling the differential group delay of light reflected by the grating by any means, much less by controlling the refractive index of the variable-index material. Chowdhury et al. do not suggest that such an operation is even possible.

In light of the foregoing, it is respectfully submitted that the presently claimed invention is clearly distinguishable over the teaching of the cited reference. Thus it is believed that the present application is in condition for allowance, and early action in that respect is courteously solicited.

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If any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,



By: Kent Daniels, P.Eng.  
Reg. No. 44206  
Attorney for the Applicants

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Ogilvy Renault  
Suite 1600  
1981 McGill College Avenue  
Montreal, Quebec  
Canada, H3A 2Y3  
(613) 780-8673